

way of the high pressure line, and this has been the focus of conventional efforts to prevent the oil from entering the cooled equipment. Applicants, however, have recognized that oil may travel to the cooled equipment by way of the low pressure line in the opposite direction of the cooling medium along that line.

Accordingly, Applicants' claim 1 recites a pumped helium circuit comprising, *inter alia*, "means for preventing oil carry-over from the compressor to the supplied equipment...[comprising] means for preventing oil leaving the low pressure port and travelling towards the supplied equipment." This feature is not disclosed or suggested by either the combination of Morse, Tanaka and Petty or the combination of Morse, Tanaka and Oshima.

Morse discloses a system that includes an accumulator 15 in the low pressure line between compressor 16 and the refrigerator to provide a buffer.¹ Morse does not describe the operation of accumulator 15 in detail, and accordingly does not disclose or suggest that it prevents oil from "leaving the low pressure port and travelling towards the supplied equipment."

Tanaka discloses a system in which "refrigeration machine oil (that is, compressor oil) circulates inside the refrigerating cycle 21 together with the refrigerant."² Thus, Tanaka, like Morse, does not disclose or suggest "preventing oil leaving the low pressure port and travelling towards the supplied equipment."

¹ Column 3, lines 25-31.

² Column 14, lines 38-40.

To remedy this deficiency of Morse and Tanaka, the Office Action relies upon either Petty or Oshima.

Petty discloses an accumulator that “functions to trap oil and/or liquid refrigerant returning to the compressor 14, and also serves to meter the trapped oil and/or liquid refrigerant back to the compressor 14 in a controlled manner.”³ Thus, in Petty oil inlet metering orifice 50 “meters the inlet of oil into the inner pipe for delivery therethrough to the compressor 14.”⁴ Accordingly, while the accumulator of Petty traps oil, this is performed to control the manner of delivery of the oil. Petty does not, however, disclose or suggest that the accumulator operates to prevent “oil leaving the low pressure port and travelling towards the supplied equipment.” Accordingly, even if one skilled in the art were motivated to combine Morse, Tanaka and Petty, the combination would not disclose or suggest all of the elements of claim 1.

Oshima discloses a compressor that includes a main suction port 25 that actually sucks oil from oil pan 27.⁵ Thus, Oshima, like Morse and Tanaka, does not disclose or suggest “preventing oil leaving the low pressure port and travelling towards the supplied equipment.” Accordingly, even if one of ordinary skill in the art were motivated to combine Morse, Tanaka and Oshima, the combination would not disclose or suggest all of the elements of claim 1.

³ Column 1, lines 17-21.

⁴ Column 4, lines 45-47.

⁵ Column 4, lines 11-15.

It should be recognized that a *prima facie* case of equivalence requires a prior art element that “performs the function specified in the claim.”⁶ Because the elements of Petty and Oshima relied upon by the Office Action do not perform the function of “preventing oil leaving the low pressure port and travelling towards the supplied equipment”, the Office Action has not established a *prima facie* case of equivalence.

Claims 2-5 are patentably distinguishable over the current grounds of rejection by virtue of their dependency.

For at least those reasons set forth above, the rejection of claims 1-5 for obviousness should be withdrawn.

Claim 6 is rejected for obviousness under 35 U.S.C. § 103(a) in view of the combination of Morse, Tanaka, Petty and U.S. Patent No. 5,807,075 to Jacobsen et al. (“Jacobsen”). This ground of rejection is respectfully traversed.

Claim 6 depends from claim 1. As discussed above, the combination of Morse, Tanaka and Petty does not disclose or suggest all of the elements of claim 1. It is respectfully submitted that Jacobsen does not remedy these deficiencies. Accordingly, the combination of Morse, Tanaka, Petty and Jacobsen does not render claim 1, and in turn claim 6, obvious and this rejection should be withdrawn.

⁶ M.P.E.P. § 2183.

Claims 7 and 8 are rejected for obviousness under 35 U.S.C. § 103(a) in view of the combination of Morse and U.S. Patent No. 6,190,138 to Hugenroth et al. ("Hugenroth"). This ground of rejection is respectfully traversed.

The combination of Morse and Hugenroth does not render claim 7 obvious because the combination does not disclose or suggest "the pressure relief valve is connected between the high pressure port and the compressor, independently of the low pressure port."

The Office Action recognizes that Morse does not disclose this element, and instead relies upon the Figure 5 embodiment of Hugenroth. Hugenroth, however, appears to disclose that the pressure relief valve of the Figure 5 embodiment connects the high-pressure output chamber of the scroll compressor to the low-pressure input chamber. Accordingly, Hugenroth does not disclose or suggest the claimed pressure relief valve, and the combination of Morse and Hugenroth does not render claim 7 obvious.

The combination of Morse and Hugenroth does not render claim 8 obvious because the combination does not disclose or suggest "preventing oil from oil-laden compressed helium from travelling from the low pressure port to the supplied equipment." As discussed above, Morse does not disclose a similar feature recited in claim 1. It is respectfully submitted that Hugenroth likewise does not disclose or suggest this feature. Accordingly, the combination of Morse and Hugenroth does not render claim 8 obvious.